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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,587	02/22/2007	Tetsuro Sato	3209-111	2274

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Reston, VA 20191

EXAMINER

JACKSON, MONIQUE R

ART UNIT	PAPER NUMBER
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1794

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02/23/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,587	Applicant(s) SATO ET AL.	
	Examiner Monique R. Jackson	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/23/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors, for example:

- a. In claims 1 and 8, the term "converted thickness" is unclear.
- b. In claim 1, the term "not undergone said roughening treatment".
- c. In claims 4, 6, and 8, the claims include parenthetical expressions wherein it is unclear whether the limitations in the parenthesis are meant to be incorporated in the claims.
- d. In claim 5, the term "rubber-like" is unclear.
- e. In claims 6 and 8, "sulfon" is misspelled.
- f. In claim 7, "the resin flow" lacks antecedent basis.
- g. In claim 8, there are multiple periods, and hence sentences.
- h. In claims 9-15, the limitation "laminate using a copper foil...according to claim" is unclear for how does the laminate "use" it. Or does the laminate just "comprise" the copper foil?

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Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohya et al (USPN 5,686,172.) Ohya et al teach a metal-foil-clad composite resin-impregnated ceramic board for use in producing printed wiring boards wherein the metal foil, preferably copper, has a 10-point surface roughness R_z of 10 microns or less, preferably 5 microns or smaller, with no adhesive layer or an adhesive layer of less than 10 microns thick between the metal foil and the resin-impregnated ceramic substrate (Abstract; Col. 1; Col. 4) Ohya et al specifically teach examples utilizing a copper foil having an R_z within the claimed range, with no roughening treatment, and no distinguishable adhesive layer other than the slight excess epoxy resin from the impregnation present within the low surface roughness of the foil (*which reads upon the claimed invention*; Col. 7, lines 29-64; Col. 20; Examples.)

5. Claim 1 is rejected under 35 U.S.C. 102(a) or (c) as being anticipated by Arakawa et al (USPN 6,733,869.) Arakawa et al teach a copper foil laminate wherein the copper foil has a maximum surface roughness R_{max} of 0 to less than 4 microns (*hence reads upon claimed R_z*),

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without any surface roughening treatment, and includes an adhesive layer having a thickness of 1-10 g/m², with specific examples utilizing a 5 micron thick adhesive layer (Col. 6, lines 13-61; Col. 8, lines 39-58; Col. 9, lines 31-42; Examples.)

6. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Poutasse et al (USPN 5,622,782; herein referred to as Poutasse *I*.) Poutasse *I* teaches a copper foil comprising an adhesion promoting layer derived from two silanes that crosslink with one another wherein the adhesion promoting layer can be applied to the shiny side of the copper foil that has not been subjected to a surface roughening treatment and has a R_{tm} of less than 4 microns, preferably less than 3 microns, more preferably in the range of about 1.5 to about 3 microns (Abstract; Col. 4; Col. 8, lines 5-51; Col. 9, lines 10-15; Col. 12, lines 41-63.) Poutasse *I* teaches that the adhesion promoting layer has a dry film thickness of about 0.002 to about 0.1 microns (Col. 8, lines 60-64.) Poutasse *I* teaches that the foil can be used to produce printed circuit boards (Col. 13.) With respect to Claims 2-3 and 10-11, the Examiner notes that the adhesion promoting layer taught by Poutasse *I* reads upon both the claimed “ultra think primer resin layer” and the claimed “silane coupling agent layer”, particularly given that Poutasse *I* teaches that the layer can be applied to the desired thickness by spraying (Col. 8, lines 47-51.)

7. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 102(a) as being anticipated by JP 2003-229648 A (JP’648; see machine translation.) JP’648 teaches a copper foil/resin base material laminate for printed wiring boards wherein the copper foil has a 10-point average surface roughness Rz of 0.5-10 micrometers, preferably 0.5-3 micrometers, and may be used without any surface roughening treatment (Abstract; Paragraphs 0007, 0022.) JP’648 teaches that the copper foil may be treated with a silane coupling agent and then an adhesive layer having a thickness of

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0.5-5g/m² can be coated on the treated foil as a solution and dried to a semi-cured state (*reads upon claimed thickness when converted to μm* ; Paragraphs 0005-0006, 0011.) JP'648 teaches that suitable silane coupling agents include amino-silanes and mercapto-silanes (Paragraph 0008.) In terms of the adhesive layer, JP'648 teaches that an epoxy resin polymer composition comprising a hardening agent is preferred and can be dissolved in a solvent and then used as a coating varnish with a concentration of 1 to 10% (Paragraph 0009-0011.) JP'648 specifically teaches an example that reads upon the claimed invention (Example 3.)

8. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4-8 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'648 in view of Komiyatani et al (USPN 6,447,915) or Hosagane et al (USPN 5,439,986.) The teachings of JP'648 are discussed above. JP'648 teaches that the adhesive layer is preferably an epoxy adhesive composition but does not specifically limit the epoxy adhesive composition, and further teaches that it can also comprise various hardening agents, curing systems, and additives but does not teach the claimed epoxy resin compositions including an aromatic polyamide resin or a polyether sulfone resin. However, it is well established in the art that such conventional

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resins can be further incorporated into an epoxy adhesive in the art to provide improved heat resistance and mechanical properties for a particular end use, as taught by Komiyatani et al or Hosagane et al, and hence one having ordinary skill in the art at the time of the invention would have been motivated to incorporate such conventional resins in the epoxy adhesive taught by JP'648, given the predictable results and utilizing routine experimentation to determine the optimum amount and solids content, based upon the desired end use and flow properties required for a particular application.

11. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poutasse et al (USPN 5,525,433; herein referred to as Poutasse *II*) in view of Komiyatani et al (USPN 6,447,915) or Hosagane et al (USPN 5,439,986). Poutasse *II* teaches an epoxy adhesive to be applied to copper foils and copper clad laminates using the same for use in making printed circuit boards, wherein Poutasse *II* teaches that the copper foil has a surface roughness on the matte side of 2-18 microns, and 1.5-3 microns on the shiny side, without any roughening treatment, and can be provided with an aminosilane coupling agent layer or treatment prior to applying the epoxy adhesive layer (Entire document, particularly Col. 6-Col. 9, line 5.) Poutasse *II* teaches that the epoxy adhesive composition can be provided as an epoxy solution in an organic solvent and then dried to form a B-stage epoxy adhesive layer wherein Poutasse *II* teaches that the dry film weight of the B-stage epoxy adhesive is preferably about 20 to about 50 grams/m² (Col. 8.) Though Poutasse *II* teaches a preferred adhesive coating weight, Poutasse *II* does not specifically limit the thickness or teach the instantly claimed thickness of 1 to 5 microns. However, it is well established in the art that adhesion layer thickness is a result effective variable affecting the adhesion strength between the two surfaces to be adhered and hence one having ordinary skill in

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the art at the time of the invention would have been motivated to determine the optimum adhesive coating weight or layer thickness for a particular adhesive composition to provide the desired adhesion properties for a particular end use, while conserving material by reducing the thickness as appropriate. In terms of the adhesive composition, though Poutasse *II* teaches an epoxy resin adhesive that may further comprise other additive resins, Poutasse *II* does not specifically teach incorporating an aromatic polyamide or polyether sulfone resin as instantly claimed. However, it is well established in the art that such conventional resins can be further incorporated into an epoxy adhesive in the art to provide improved heat resistance and mechanical properties for a particular end use, as taught by Komiyatani et al or Hosagane et al, and hence one having ordinary skill in the art at the time of the invention would have been motivated to incorporate such conventional resins in the epoxy adhesive taught by Poutasse *II*, utilizing routine experimentation to determine the optimum amount and solids content, based upon the desired end use and flow properties required for a particular application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R. Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 10:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Monique R Jackson/
Primary Examiner, Art Unit 1794
February 16, 2010